DaimlerChrysler AG

Patent Claims

1. A method for monitoring an exhaust system of a motor vehicle having an internal combustion engine (1) and having monitoring electronics (7), a temperature sensor (6) for measuring an outlet-side exhaust-gas temperature (T2) being arranged at the outlet side (14) of an exhaust pipe section (15) which is intended to accommodate a component (4) with a purifying activity, characterized in that the monitoring electronics (7) compare a time curve of the outlet-side exhaust-gas temperature (T2) with a time curve of an inlet-side exhaust-gas temperature (T1) at the inlet side (13) of the exhaust pipe section (15) and/or with a time curve of a calculated value (T2*) for the exhaust-gas temperature at the outlet side (14) of the exhaust pipe section (15), the calculated value (T2*) being determined on the basis of the heat-storing and/or fluid-dynamic action of the component (4) with a purifying activity.

2. The method as claimed in claim 1, characterized in that the monitoring electronics (7) determine the time derivatives (dT1/dt) and (dT2/dt) of the inlet-side exhaust-gas temperature (T1) and the outlet-side exhaust-gas temperature (T2), and the difference (dT1/dt - dT2/dt) between the derivatives.

3. The method as claimed in claim 2, characterized in that the monitoring electronics (7) generate a signal which indicates the absence of the component (4) with a purifying activity or the presence of an incorrect component if the difference (dT1/dt - dT2/dt) between the derivatives is within a predetermined range of values.

4. The method as claimed in claim 2, characterized in that the monitoring electronics (7) generate a signal which indicates the absence of the component (4) with a purifying activity or the presence of an incorrect component if the difference (dT1/dt - dT2/dt) between the derivatives is within a predetermined range of values and the time derivative (dT1/dt) of the inlet-side exhaust-gas temperature (T1) is outside a predetermined range of values.

5. The method as claimed in claim 1, characterized in that the monitoring electronics (7) determine the time derivatives (dT2/dt) and (dT2*/dt) of the outlet-side exhaust-gas temperature (T2) and of the calculated temperature (T2*) and the difference (dT2*/dt - dT2/dt) between the derivatives.

6. The method as claimed in claim 5, characterized in that the monitoring electronics (7) generate a signal which indicates the absence of the component (4) with a purifying activity or the presence of an incorrect component if the difference (dT2*/dt - dT2/dt) between the derivatives is outside a predetermined range of values.

7. The method as claimed in claim 5, characterized in that the monitoring electronics (7) determine the time derivative (dT1/dt) of the inlet-side exhaust-gas temperature (T1) and generate a signal which indicates the absence of the component (4) with a purifying activity or the presence of an incorrect component if the difference (dT2*/dt - dT2/dt) between the derivatives is outside a predetermined range of values and the time derivative (dT1/dt) of the inlet-side exhaust-gas temperature (T1) is outside a predetermined range of values.

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Method for monitoring an exhaust system of a motor vehicle

The present invention relates to a method for monitoring an exhaust system of a motor vehicle having an internal combustion engine and having monitoring electronics, comprising the features of the preamble of claim 1.

German laid-open specification DE 100 13 893 A1 has disclosed a method for monitoring an exhaust system of a motor vehicle having an internal combustion engine. In this method, the catalytic activity of a catalytic converter arranged as a component with a purifying activity in an exhaust pipe section is assessed. The catalytic activity is assessed by determining the light-off temperature of the carbon monoxide oxidation reaction. The carbon monoxide oxidation reaction process is recorded by corresponding sensors arranged upstream and downstream of the catalytic converter. In addition, the exhaust-gas temperature downstream of the catalytic converter is measured, for which purpose a temperature sensor is arranged at the outlet side of the exhaust pipe section which is intended to accommodate the catalytic converter. Monitoring electronics determine the difference between the exhaust-gas temperature downstream of the catalytic converter and the light-off temperature. The activity of the catalytic converter is assessed on the basis of this result and of the carbon monoxide conversion rate recorded by sensor means, and the exhaust system is monitored in this way.

By contrast, it is an object of the invention to